54452

NL Industries, Inc. Site

Pedricktown, New Jersey

EPA
Region 2

July 1991

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred options for addressing several areas of hazardous surface contamination at the NL Industries, Inc. (NL) site. In addition, the Proposed Plan includes summaries of other alternatives evaluated for this Early Remedial Action, designated as Operable Unit Two for the site. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and The New Jersey Department of Environmental Protection (NJDEP), the support agency for this project. EPA, in consultation with NJDEP, will select a remedy for the site only after the public comment period has ended and the information submitted during this time has been reviewed and considered.

THE COMMUNITY'S ROLE IN THE SELECTION PROCESS

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986. This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study (FFS) and other documents contained in the administrative record for this site. EPA encourages the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities that have been conducted to date. The administrative record file contains the information upon which the selection of the response action will be based. The file is available at the following locations:

Penns Grove Public Library
South Broad Street
Penns Grove, New Jersey 08069
(609) 299-9255

Hours:M,W:	10:00am-1:00pm 3:00pm-8:00pm
Th,F:	10:00am-1:00pm 3:00pm-6:00pm
Sa:	10:00am-1:00pm

and

U.S. Environmental Protection Agency
Emergency & Remedial Response Division
Division File Room
26 Federal Plaza, 29th Floor
New York, New York 10278

Hours:M-F: 9:00am-5:00pm

EPA, in consultation with NJDEP, may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified herein.

DATES TO REMEMBER

July 17, 1991-August 16, 1991
Public comment period for Operable Unit Two Preferred Remedy

Tuesday, August 6, 1991
7:00pm-9:00pm
Public Meeting at:

Oldmans Middle School
Freed Road
Pedricktown, New Jersey 08067

EPA solicits input from the community on the cleanup methods proposed at each Superfund site. EPA has set a public comment period from July 17, 1991 through August 16, 1991 to encourage public participation in the selection process. The comment period includes a public meeting at which EPA will discuss the FFS and Proposed Plan, answer questions and accept both oral and written comments.

The public meeting for the site is scheduled from 7:00 pm until 9:00 pm, on Tuesday, August 6, 1991, and will be held at the Oldmans Middle School, which is located on Freed Road in Pedricktown, New Jersey.

Comments on the Proposed Plan will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision. The Record of Decision is the document that presents EPA's final selection for response actions. Written comments on this Proposed Plan should be sent by close of business, August 16, 1991, to:

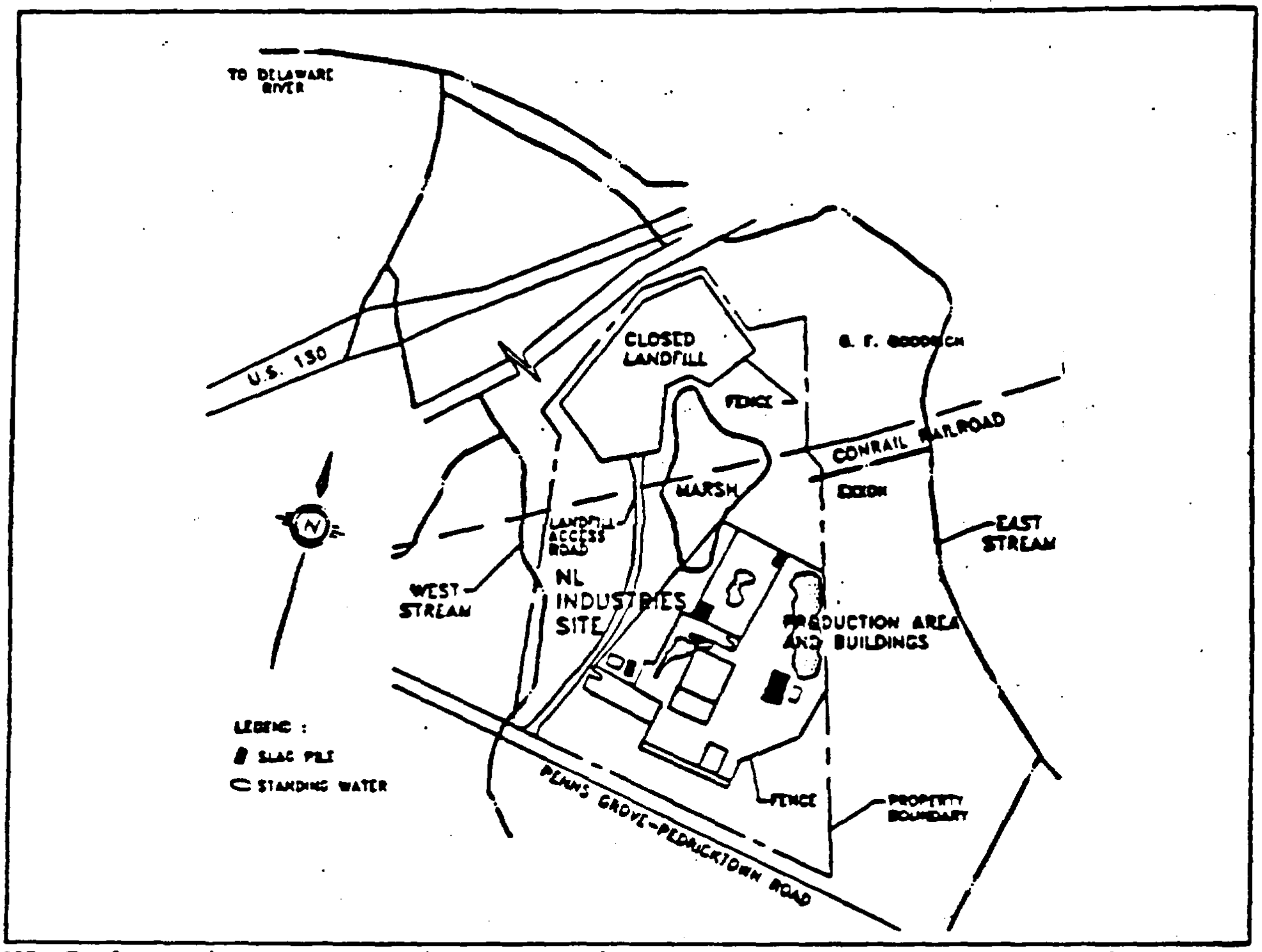
Michael Gilbert, Project Manager
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
26 Federal Plaza, Room 720
New York, New York 10278

SITE BACKGROUND

The NL site is an abandoned, secondary lead smelting facility, situated on 44 acres of land on Pennsgrove-Pedricktown Road, in Pedricktown, Salem County, New Jersey. The site is bisected by a railroad, with approximately 16 acres north of the tracks which includes a closed 5.6-acre landfill. The southern 28 acres contain the industrial area and landfill access road (refer to site location map). NL maintains the landfill area and operates the landfill's leachate collection system.

The West and East Streams, parts of which are intermittent tributaries of the Delaware River, border and receive surface runoff from the site. The nearest home is less than 1000 feet from the site and B.F. Goodrich and the Tomah Division of Exxon are active neighboring industrial facilities.

In 1972, the facility began the operation of recycling lead from spent automotive batteries. The batteries were drained of sulfuric acid, crushed and then processed for lead recovery at the smelting facility. The plastic and rubber waste materials resulting from the battery-crushing operation were buried in the on-site landfill, along with slag from the smelting process.



NL Industries, Inc. Site Location Map (Not Drawn to Scale)

Between 1973 and 1980, NJDEP cited NL with 46 violations of the State air and water regulations. Water pollution violations were directed toward the battery storage area and the on-site landfill. NJDEP conducted an air-monitoring program in 1980 that detected airborne quantities of lead, cadmium, antimony and ferrous sulfate produced by the smelting process, at levels exceeding the facility's operating permits.

NL ceased smelting operations in May 1982. In October 1982, NL entered into an Administrative Consent Order (ACO) with NJDEP to conduct a remedial program to address the site soils, paved areas, surface water runoff, landfill and groundwater. In December 1982, the site was placed on the National Priorities List.

In February 1983, the plant was sold to National Smelting of New Jersey (NSNJ) and smelting operations recommenced. NSNJ entered into an amended ACO with NJDEP, National Smelting and Refining Company, Inc., which was NSNJ's parent company, and NL. The amended ACO clarified the environmental responsibilities of NSNJ and NL. NSNJ ceased operation in January 1984, and filed for bankruptcy in March 1984.

In 1986, NL signed a consent order with EPA, whereby NL assumed responsibility for conducting a Remedial Investigation and Feasibility Study (RI/FS) for the site with EPA oversight. Versions of the RI report were submitted to EPA in April and October 1990, and April 1991.

SCOPE AND ROLE OF THE OPERABLE UNIT

Recognizing the size and complexity of the site, EPA is addressing its remediation in phases, or operable units. This Proposed Plan addresses the remediation of several areas of hazardous surface contamination which EPA has designated as Operable Unit Two. These areas, which include slag and lead oxide piles, contaminated surfaces and debris, and contaminated standing water, were found to be significant and continual sources of contaminant migration from the site. As a result, EPA decided to address these areas on an expedited basis that would be consistent with the long-term remedy for the site. To achieve this objective, EPA conducted a FFS that identified and evaluated remedial alternatives for an Early Remedial Action which would continue the site-stabilization and remediation efforts which were initiated under a Removal Action. The Early Remedial Action will prevent further releases of contaminants from areas of hazardous surface contamination and can be implemented while the site-wide RI/FS proceeds.

Removal Action Activities

EPA conducted a multi-phased Removal Action at the site to address several conditions that presented a risk to public health and the environment. EPA conducted Phase I of the Removal Action in March and April 1989 which consisted of construction of a chain-link fence to enclose the former smelting plant and spraying or encapsulation of the on-site slag piles. Encapsulation of the piles provided temporary protection from wind and rain erosion and contaminant migration.

In November 1989, EPA began Phase Two of the Removal Action. This phase consisted of additional encapsulation of the slag piles, securing the entrances of the contaminated buildings, and removal of over 40,000 pounds of the most toxic and reactive materials.

During March of 1991, EPA performed Phase III of its removal activities at the site when damages to the perimeter fence were repaired and a new entrance gate was installed. In addition, approximately 2,200 empty, rusted and deteriorated 55-gallon steel drums were removed from the site. All on-site containers, stored in open areas and containing materials threatening release, were emptied and staged under an existing covered area at the rear of the facility. Sand/gravel berms were installed around these materials to deter the release of hazardous substances from this area. Finally, forty-four 55-gallon drums containing copper wire and cable were removed from the facility and were shipped to EPA's facility in Edison, New Jersey. Theft of this material has been the primary target of trespassers at the site.

Operable Unit One

A site-wide RI/FS, which EPA has designated as Operable Unit One, is currently being performed for NL by

O'Brien & Gere Engineers, Inc. This RI is a comprehensive study designed to determine the nature and extent of contamination on the site and areas adjacent to the site in various environmental media such as air, soils, groundwater, surface water and stream sediments. The FS will identify and evaluate remedial action alternatives to address contaminant sources and eliminate potential long-term health risks.

SUMMARY OF AREAS OF CONCERN AND SITE RISKS

EPA conducted a baseline risk assessment to evaluate the potential risks associated with conditions at the site. The baseline risk assessment qualitatively addressed risks which could result from contamination at the site, if no remedial action were taken.

Numerous contamination sources of hazardous wastes were identified at the site during previous investigations conducted by EPA. High concentrations of lead, cadmium, nickel and other metals have been detected on site in the slag, standing water and dust. Lead exposure causes noncarcinogenic effects on the central nervous system. In addition, lead is considered a probable human carcinogen. Exposure to cadmium and nickel has been associated with noncarcinogenic effects via ingestion. Cadmium is a probable human carcinogen by inhalation based on evidence from human and animal studies. Nickel has an 'A' classification, denoting a human carcinogen, and is carcinogenic by inhalation.

The exposure assessment addressed three exposure media - the slag piles, dust and standing water. A brief description of these areas follows. Potentially exposed populations, fate and transport mechanisms and exposure routes were identified for each.

Slag and Lead Oxide Piles

Four slag piles totaling approximately 9,800 cubic yards are stored on site in open, deteriorating bins and on paved ground surfaces. In addition, approximately 200 cubic yards of lead oxide and similar materials are stored in enclosed areas. The slag materials were sprayed with an encapsulant to mitigate releases of hazardous constituents and contaminant migration which would occur from wind and rain erosion.

High concentrations of metals were detected in the slag and lead oxide piles. Concentrations of lead detected were as high as 130,000 mg/kg and 480,000 mg/kg in the slag and lead oxide piles, respectively. These concentrations exceeded the lead cleanup range of 500 to 1000 ppm listed in EPA's "Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites." In addition, results of the Toxicity Characteristic Leachability Procedure (TCLP) indicate that the majority of piles tested are hazardous based on leachability of lead and/or cadmium.

Based on the level of contamination detected in the slag and lead oxide piles, a qualitative risk assessment indicates that the potential for inhalation of contaminated dust is considered significant for on-site workers and nearby receptors. Runoff via rain erosion is a mechanism for potential release of contaminants into the environment. In addition, exposure via accidental ingestion, inhalation or through dermal contact is of potential concern for site workers and trespassers on the site.

Debris and Contaminated Surfaces

The process building walls, ceiling, floors, structural members, piping, and equipment are covered with dust. The results of wipe tests indicated high concentrations of lead, iron, cadmium, nickel and copper throughout the building. Concentrations of lead ranged from 0.88 to 552 micrograms/kg/quarter meter^2. Approximately 2500 cubic yards of contaminated debris consisting of lead dross and contaminated wooden pallets, baghouse bags, scrap metal and other materials are present throughout the site. Many of these materials were consolidated in temporarily protected areas as part of the most recent removal activity.

Releases of contaminants to air may occur from the migration of dust due to wind or activities at the site. The metal concentrations in the dust are significant and may pose a health risk, if inhaled by site workers or individuals downwind of the site. The potential also exists for site workers, trespassers and animals to be exposed to contaminated dust through dermal contact or ingestion.

Standing Water and Sediments

It is suspected that the drains are blocked in areas where standing water is ponded. It was estimated that approximately one million gallons of contaminated standing water (i.e., accumulated rainwater) are present at the site. This water was tested and found to have high concentrations of lead and other metals. Lead and cadmium concentrations were detected as high as 5,500 ppb and 560 ppb, respectively. The contamination is due, in part, to airborne particulates, and rain that has contacted the slag and lead oxide piles and other waste materials. In addition, approximately 200 cubic yards of sediments were estimated to have accumulated in the standing water.

Given site conditions, accidental ingestion and dermal contact are potentially the most likely on-site exposure pathways. The potential receptors would likely be site workers and area trespassers.

Off-site contaminant migration is potentially a significant exposure pathway from the NL site. During heavy rainfall, the standing water eventually overflows the site in the area of the West Stream. Concentrations of lead in the stream were measured as high as 206 ppb in surface water samples and 26,800 ppm in stream sediment samples taken in 1990. The lead concentrations in the stream exceed the EPA recommended criterion of 1.3 ppb for protection of aquatic life based on chronic toxicity.

In summary, current on- and off-site exposures resulting from hazardous materials present in the slag and lead oxide piles, contaminated surfaces and debris and standing water pose an imminent and substantial threat to public health and the environment. The proposed remedy will address these source areas on an expedited basis while the site-wide RI/FS continues to address the full nature and extent of contaminant migration from the site.

SUMMARY OF ALTERNATIVES

The FFS presents remedial alternatives to address three areas of hazardous surface contamination at the site: slag and lead oxide piles, debris and contaminated surfaces, and standing water and sediments. A wide range of technologies were considered to address the remedial objectives for each of these areas. These technologies were screened on the basis of effectiveness, implementability and costs. Those that were not eliminated from consideration during screening were assembled into the remedial alternatives presented below. The term "Months to Achieve Remedial Action Objectives" refers to the amount of time it would take to design, construct and complete the action. "N/A" implies that the "Months to Achieve Remedial Action Objectives" is not applicable for the this alternative.

Slag and Lead Oxide Piles

Alternative SP-1: No Action

Capital Cost:	$0
Annual O&M Costs:	$25,000
Present Worth Cost:	$439,000

Months to Achieve Remedial Action Objectives: N/A

Superfund regulations require that a No Action alternative be evaluated at every site to establish a baseline for comparison. The No Action alternative for the slag and lead oxide piles would include annual sampling and analysis of groundwater, surface waters and soils on and around the site to monitor the migration of contaminants. In addition, assessments would be performed every five years to determine the need for further actions.

Alternative SP-3: Off-Site Flame Reactor

Capital Cost:	$4,215,100
Annual O&M Costs:	$0
Present Worth Cost:	$4,215,100

Months to Achieve Remedial Action Objectives: Eighteen

This alternative would include removing and treating the slag and lead oxide off site in a flame reactor. This innovative technology would involve subjecting the wastes to very hot gas which reacts rapidly to produce a nonhazardous slag and a recyclable metal-enriched oxide. The volume of material would be reduced 10 to 20 percent. The slag could possibly be recycled as fill material or road aggregate and the metal-enriched oxide could be recycled by a secondary smelting facility, although at this time, no markets have been identified for these materials.

Alternative SP-4: On-Site Hydro-Metallurgical Leaching/ On-Site Disposal

Capital Cost:	$2,980,400
Annual O&M Costs:	$17,000
Present Worth Cost:	$3,269,500

Months to Achieve Remedial Action Objectives: Sixteen

This alternative would treat the existing waste by a hydro-metallurgical leaching process on site. Bench-scale testing would be required to define design criteria. The process, which is widely used in the metallurgical industry, selectively dissolves lead and other heavy metals present in the waste materials. The leaching step would be followed by filtration, residue collection, and precipitation. The precipitate is a lead-rich, potentially marketable product. The caustic leaching solution would be recycled through the process. The resulting treated material would require testing according to the TCLP to confirm that the material is nonhazardous. There would be no significant reduction in volume of the material. The treated material would be redeposited on site in accordance with Resource Conservation and Recovery Act (RCRA) treatment standards. For costing purposes, it was assumed that on-site placement would meet RCRA Subtitle D landfill requirements.

Alternative SP-5: On-Site Solidification/Stabilization/ On-site Disposal

Capital Cost:	$2,014,000
Annual O&M Costs:	$17,000
Present Worth Cost:	$2,303,100

Months to Achieve Remedial Action Objectives: Fifteen

This alternative would stabilize the existing waste on site by using a mobile treatment system. This technology immobilizes contaminants by binding them into an insoluble matrix. Stabilizing agents such as cement, pozzolan, silicates and/or proprietary polymers would be mixed with the feed material. The equipment is similar to that used for cement mixing and handling. Bench-scale tests would be required to select the proper quantity of stabilizing agents, feed material, and water. Depending on the specific treatment process, the stabilized volume may increase up to 40 percent of the original volume. The stabilized material would require testing according to the TCLP to confirm that the material is nonhazardous. Disposal of the treated material would occur on site in accordance with RCRA treatment standards. For costing purposes, it was assumed that on-site placement would meet RCRA Subtitle D landfill requirements.

__Debris and Contaminated Surfaces__

Alternative CS-1: No Action

Capital Cost:	$17,700
Annual O&M Costs:	$6,800
Present Worth Cost:	$136,000

Months to Achieve Remedial Action Objectives: N/A

The No Action alternative for contaminated surfaces and debris provides a baseline against which other alternatives may be compared. Contaminated debris, equipment and surfaces would be left in their current condition. Roofs would be repaired where necessary and a long-term maintenance program would be implemented to ensure that the buildings are not accessible. In addition, assessments would be performed every five years to determine the need for further actions.

Alternative CS-2: Debris and Contaminated Surfaces Decontamination/Off-Site Treatment and Disposal

Capital Cost:	$1,691,100
Annual O&M Costs:	$0
Present Worth Cost:	$1,691,100

Months to Achieve Remedial Action Objectives: Twelve

This alternative would involve decontaminating the contaminated building surfaces, debris (i.e., scrap metal, pallets, etc.) and equipment using dusting, vacuuming and wiping procedures. Parts of the buildings and surfaces which could withstand high water pressure would be cleaned by hydroblasting. Materials would be recycled where possible. Debris that could not be decontaminated, such as contaminated baghouse bags, along with collected dust, would be transported to an appropriate off-site RCRA hazardous waste treatment and disposal facility. Contaminated wash water would be treated with the on-site standing water.

<u>Standing Water and Sediments</u>

Alternative SW-1: No Action

Capital Cost:	$0
Annual O&M:	$10,700
Present Worth Cost:	$220,100

Months to Achieve Remedial Action Objectives: N/A

The No Action alternative for standing water provides a baseline against which other alternatives may be compared. This alternative would rely on natural attenuation of contaminated standing (rain) water without any treatment. Drains would remain plugged and contaminated. Contaminated standing water would be likely to continue to overflow the site into the West Stream. This alternative would include annual monitoring of groundwater, surface waters and soils in and around the site to track contaminant migration. In addition, assessments would be performed every five years to determine the need for further actions.

Alternative SW-2: On-Site Treatment and Groundwater Recharge

Capital Cost:	$1,335,000
Annual O&M Costs:	$0
Present Worth Cost:	$1,335,000

Months to Achieve Remedial Action Objectives: Fourteen

This alternative would consist of collecting and treating approximately one million gallons of standing water on site. Wash water, which was generated from the decontamination of contaminated surfaces and debris, would also be treated with the standing water. The treatment process would consist of precipitation, clarification, filtration and if necessary, ion exchange or ion replacement. The treated water would be recharged to the groundwater via injection wells or infiltration basins. Sediments and sludges generated during the treatment process would be treated and disposed of off site at a facility capable of accepting these materials. The treatment system would be designed to reduce metal concentrations to meet Federal and State discharge standards. Treatability studies would be required to define the design and operating criteria to meet the required standards for groundwater recharge. As part of this alternative, drains would be unplugged and cleaned, which in conjunction with the decontamination of buildings and paved surfaces, would prevent contaminated runoff from leaving the site in the future.

Alternative SW-3: Off-Site Treatment and Disposal

Capital Cost:	$993,200
Annual O&M Costs:	$0
Present Worth Cost:	$993,200

Months to Achieve Remedial Action Objectives: Six

This alternative would consist of collecting approximately one million gallons of standing water in approximately 200 tanker trucks and transporting it to an off-site, RCRA-permitted treatment facility, which would be capable of accepting the water with no pretreatment at the site. Wash water, which would be generated from the decontamination of contaminated surfaces and debris, would also be transported with the standing water. Sediments would be transported to an off-site treatment and disposal facility that would be capable of accepting this material. Samples of the contaminated water and sediments would be sent to the treatment facilities to ensure waste acceptance. As part of this alternative, drains would be unplugged and cleaned, which in conjunction with the decontamination of buildings and paved surfaces, would prevent contaminated runoff from leaving the site in the future.

EVALUATION OF ALTERNATIVES

The nine criteria used to evaluate all remedial alternatives fall into four categories: environmental/public health protectiveness, compliance with required cleanup standards, technical performance and cost. In addition, the selected remedy should result in permanent solutions and should use treatment to the maximum extent practicable. This section discusses and compares the performance of the remedial alternatives under consideration for each source against these criteria. The nine criteria are summarized below:

Overall Protection of Human Health and Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of Federal and State environmental statutes and/or provide grounds for invoking a waiver.

Long-term Effectiveness and Permanence refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once remedial objectives have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment is the anticipated performance of the disposal or treatment technologies that may be employed in a remedy.

Short-term Effectiveness refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost refers to estimates used to compare costs among various alternatives. Costs include both capital and operation and maintenance costs. Cost comparisons are made on the basis of the present worth value, of the entire cost of the alternative, at the beginning of construction.

State Acceptance will be assessed in the Record of Decision following a review of the State's comments received on the FFS report and the Proposed Plan. The NJDEP concurs with the proposed remedy.

Community Acceptance will be assessed in the Record of Decision following a review of the public comments received on the FFS report and the Proposed Plan.

NO ACTION

The No Action alternatives SP-1, CS-1, and SW-1 would not provide protection of public health or the environment or any effective remediation in the long or short term. Contaminants would remain in their present state, with little or no reduction in toxicity, mobility or volume. Potential risks due to exposure to and migration of contaminants would remain. The No Action alternatives are the simplest to implement from a technical standpoint, since they only involve actions to inspect and sample the site periodically, ensure restricted site access, and continue to provide information about the site to the surrounding community.

Since the No Action alternatives SP-1, CS-1 and SW-1 would not be protective of human health and the environment or comply with ARARs, they are eliminated from further consideration for the preferred alternatives.

SLAG AND LEAD OXIDE PILES

Alternative SP-5, which involves solidification/stabilization of the slag and lead oxide piles, would be effective and permanent in reducing risks to human health and the environment. Materials of similar composition to the slag and lead oxide, such as certain lead feedstocks, would be treated with these materials. Solidification/stabilization would be relatively simple to implement, since a one-step mixing and placement process is used. This alternative would treat these wastes to be nonhazardous, which would be ensured by testing according to the TCLP.

The treated material would be placed on site in accordance with RCRA treatment standards. For cost-estimating purposes, it was assumed that the on-site placement would meet RCRA Subtitle D requirements, although the actual disposal requirements would be defined in design, pending treatability studies. Toxicity of the hazardous constituents of the materials would be reduced in that they would be immobilized in the stabilized mass and no longer present a direct contact threat. Mobility would also be reduced and volume may increase up to 40 percent, depending upon the specific treatment process. Although some long-term uncertainties regarding the integrity of the stabilized mass have been raised, solidification/stabilization is preferable for treating inorganic contamination and will inhibit leaching of contaminants. Furthermore, efficacy testing will be conducted and the material will be placed in accordance with RCRA treatment standards to alleviate this concern. The technology is widely available, proven effective for inorganics, cost-effective and readily implementable.

Alternatives SP-3 and SP-4 would be effective in the long and short term in protecting human health and the environment and would result in a reduction of toxicity, mobility and volume of the slag and lead oxide piles. However, these alternatives have not been utilized at Superfund sites and are more expensive than Alternative SP-5. Furthermore, Alternative SP-3, which involves a flame reactor, is considered an innovative technology and implementability on a commercial scale has not been proven. Markets have not been identified for the process byproducts associated with this alternative; this may further increase costs. Alternative SP-4, which uses a hydro-metallurgical leaching process, may require a series of steps to leach multiple contaminants. This alternative would also produce a slag and lead oxide residue which would require disposal, in addition to large amounts of liquid wastes generated during the process.

Given the site conditions, solidification/stabilization offers the greatest certainty for treating the slag and lead oxide piles. Accordingly, RCRA treatment standards should be readily achievable after treatment has immobilized the waste materials.

Occupational Safety and Health Administration (OSHA) Standards, RCRA Land Disposal Restrictions (LDR), RCRA Subtitle D Nonhazardous Waste Management Standards and RCRA Identification of Hazardous Waste, which defines the TCLP to characterize a waste as being hazardous, are ARARS which apply to, and would be met by, Alternatives SP-3, SP-4 and SP-5. Department of Transportation (DOT) Rules for Hazardous Materials Transport and RCRA Requirements for Transporting Waste for Off-site Disposal would apply and be met by Alternative SP-3. Alternative SP-5 would comply with 40 CFR 264, Subpart X, which provides standards that are applicable to the on-site solidification/stabilization of contaminated waste.

CONTAMINATED SURFACES AND DEBRIS

Alternative CS-2, decontamination of contaminated surfaces and debris with off-site treatment and disposal is the only alternative which would satisfy the criteria. It would be permanent and effective in protecting human health and the environment, completely reduce mobility, toxicity and volume of the contamination at the site, and be readily implementable. ARARS which apply to, and would be met by, this alternative are OSHA Standards, DOT Rules for Hazardous Materials Transport, and RCRA Requirements for Transporting Waste for Off-site Disposal.

Short-term risks associated with dust emissions and accidents would exist, but could be mitigated by protective equipment and adherence to the site-specific health and safety plan. Long-term reliable protection would be achieved by removing the material from the site. There would be no operation and maintenance costs for this alternative.

STANDING WATER

Alternative SW-3, which involves off-site treatment and disposal of contaminated standing water and sediments, would eliminate the future threat of on-site exposure and off-site contaminant migration. It would be permanent and effective in protecting human health and the environment, comply with ARARs, completely reduce mobility, toxicity and volume of the contaminated water and be readily implementable. For the estimated one million gallons of standing water, it would be the more cost-effective than Alternative SW-2. There would be no operation and maintenance costs for this alternative.

Alternative SW-2, which involves on-site treatment followed by groundwater recharge, would also be effective and permanent in protecting human health and the environment. It would reduce the toxicity, mobility and volume of contamination through treatment to required Federal and State discharge standards.

Short-term risks associated with operation of the treatment system could be mitigated by protective equipment and adherence to the site-specific health and safety plan. Long-term reliable protection would be achieved by removing the contaminated water from the site.

Alternative SW-2, would require more time to implement than Alternative SW-3 and be more costly, while being no more effective in meeting remedial objectives. Alternative SW-2 would require time to conduct a treatability study to define the design and operating parameters of the treatment process, and design and set up an on-site treatment facility to meet the stringent treatment levels required for groundwater recharge.

OSHA Standards are ARARs that would be met by both Alternatives SW-2 and SW-3. All Federal and State standards applicable for recharge of treated wastewater to groundwater would apply and be met by Alternative SW-2. Alternative SW-3, which involves off-site treatment and disposal, would meet DOT Rules for Hazardous Materials Transport and RCRA Requirements for Transporting Waste for Off-site Disposal. The shipment of contaminated water containing hazardous constituents to an off-site treatment and disposal facility would be consistent with EPA's policy to ensure that the facility is authorized to accept such material in compliance with RCRA operating standards.

SUMMARY OF THE PREFERRED ALTERNATIVE

The evaluation of the alternatives in the previous section discussed each of the alternatives relative to criteria established under the Superfund law and regulations. The intent of the Early Remedial Action is to remediate those areas of the site that require an expedited response, and to implement remedial actions that will be consistent with the final remedy at the site.

After careful consideration of all reasonable alternatives, EPA proposes utilizing the following alternatives for the Early Remedial Action at the NL site:

SLAG & LEAD OXIDE PILES
SP-5:Solidification/Stabilization/On-Site Disposal

SURFACES AND DEBRIS
CS-2:Decontamination/Off-Site Treatment and Disposal

STANDING WATER
SW-3:Off-Site Treatment and Disposal

The preferred alternatives represent the best balance of trade-offs among the criteria used to evaluate remedial actions. Based on the information available at this time, the preferred alternatives would be more protective than competing alternatives, attain ARARs, be cost-effective and would use permanent and complete treatment technologies to the maximum extent possible.

First, the slag and lead oxide piles, in addition to similar materials, would be treated using the solidification/stabilization technology. Concurrently, buildings, paved surfaces, equipment and debris would be decontaminated. Subsequently, the contaminated standing water and water used for decontamination of buildings, etc., would be collected and transported for off-site treatment and disposal. Finally, drains would be decontaminated and unplugged. Through this sequence, the sources of contaminated runoff would be eliminated and water from future rain events would drain through these areas without transporting contamination off site.

SUMMARY OF THE PREFERRED ALTERNATIVES

Remedial Alternative	Present Worth Cost ($1000)	Months to Achieve Remedial Objectives	Comments
SLAG & LEAD OXIDE PILES (SP-5:Solidification/ Stabilization/On-Site Disposal)	$ 2,303	Fifteen	Protective, reduces mobility and exposure to toxicity, readily implemented, cost-effective
SURFACES AND DEBRIS (CS-2:Decontamination/ Off-Site Treatment and Disposal)	$ 1,691	Twelve (can be concurrent w/Alternative SP-5)	Protective, reduces toxicity, mobility, and volume, readily implemented, permanent
STANDING WATER (SW-3:Off-Site Treatment and Disposal)	$ 993.2	Six	Protective, reduces toxicity, mobility and volume, cost-effective permanent
ESTIMATED TOTAL	$ 4,987		